

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-18 (canceled).

19. (new) A phase change memory comprising:

 a phase change memory material layer having a lateral extension; and

 first and second electrical contacts configured to define a lateral switching zone in the memory material layer between the first and second electrical contacts wherein the lateral switching zone can be traversed by a current signal that can be used to induce a reversible phase change in the phase change memory material layer between a crystalline phase and an amorphous phase and thus a change in resistance of the phase change material in the lateral switching zone.

20. (new) The phase change memory according to claim 19 wherein current conduction of the current signal through the switching zone takes place along the lateral extension.

21. (new) The phase change memory according to claim 20 wherein the lateral switching zone is located at a narrowing in the memory material layer between the first and second electrical contacts and the size of the narrowing is less than the memory material layer size at the first or second electrical contacts.

22. (new) The phase change memory according to claim 21 further comprising a traversing surface area formed perpendicularly to

the lateral extension for current conduction in the lateral switching zone and is narrowed in relation to a traversing surface area for current conduction at the first or second electrical contacts, wherein the ratio between the lateral switching zone traversing area and contact traversing areas is in a range of between 1:2 and 1:100.

23. (new) The phase change memory according to claim 22 wherein a vertical extension size (D) of the lateral switching zone narrowing is less than the memory material layer vertical extension size at the first or second electrical contact.

24. (new) The phase change memory according to claim 23 wherein the first and second electrical contacts adjoin the memory material layer and the switching zone is formed in the memory material layer at a distance from the first and/or second contact.

25. (new) The phase change memory according to claim 24 wherein the distance between the first and second electrical contact is oriented along the lateral extension and the first electrical contact is located below the memory material layer and the second electrical contact is located above the memory material layer.

26. (new) The phase change memory according to claim 24 wherein the distance between the first and second electrical contact is oriented along the lateral extension, wherein the first and the second electrical contacts are located above the memory material layer.

27. (new) The phase change memory according to claim 25 wherein

the lateral switching zone is located between the first and second electrical contacts and above the first and below the second electrical contact along the lateral extension.

28. (new) The phase change memory according to claim 27 further comprising a core forming zone adjoining the memory material layer.

29. (new) The phase change memory according to claim 28 wherein the first and second electrical contacts and the memory material layer form part of a mesa which is applied to a substrate, wherein the memory material layer is insulated from a heat sink by a thermal barrier.

30. (new) The phase change memory according to claim 26 wherein the lateral switching zone is located between the first and second electrical contacts and below the first and second electrical contact along the lateral extension.

31. (new) The phase change memory according to claim 30 further comprising a core forming zone adjoining the memory material layer.

32. (new) The phase change memory according to claim 31 wherein the first and second electrical contacts and the memory material layer form part of a mesa which is applied to a substrate, wherein the memory material layer is insulated from a heat sink by a thermal barrier.

33. (new) A phase change memory cell comprising:

a plurality of phase change memories, wherein each phase change memory comprises:

a phase change memory material layer having a lateral extension; and

first and second electrical contacts configured to define a lateral switching zone in the memory material layer between the first and second electrical contacts wherein the lateral switching zone can be traversed by a current signal that can be used to induce a reversible phase change in the phase change memory material layer between a crystalline phase and an amorphous phase and thus a change in resistance of the phase change material in the lateral switching zone; and

in each phase change memory cell, one of the electrical contacts of each phase change memory is at the same electrical potential as a respective one of the electrical contacts of the other phase change memories.

34. (new) The phase change memory cell according to claim 33 further comprising a selection unit with a non-linear current/voltage characteristic.

35. (new) The phase change memory cell according to claim 34 wherein the selection unit is integrated in the phase change memory and/or the phase change memory cell.

36. (new) The phase change memory cell according to claim 34 wherein the selection unit is located in the phase change memory between the memory material layer and the first electrical contact and/or between the memory material layer and the second electrical contact.

37. (new) A 2-dimensional phase change memory cell array comprising a plurality of two-dimensionally connected and individually addressable phase change memory cells wherein each

memory cell comprises:

a plurality of phase change memories, wherein each phase change memory comprises:

a phase change memory material layer having a lateral extension; and

first and second electrical contacts configured to define a lateral switching zone in the memory material layer between the first and second electrical contacts wherein the lateral switching zone can be traversed by a current signal that can be used to induce a reversible phase change in the phase change memory material layer between a crystalline phase and an amorphous phase and thus a change in resistance of the phase change material in the lateral switching zone; and

in each phase change memory, one of the electrical contacts of each phase change memory is at the same electrical potential as a respective one of the electrical contacts of the other phase change memories.

38. (new) A 3D phase change memory cell array comprising:

a plurality of two-dimensionally connected and individually addressable phase change memory cell arrays wherein each memory cell array comprises:

a plurality of phase change memories, wherein each phase change memory comprises:

a phase change memory material layer having a lateral extension; and

first and second electrical contacts configured to define a lateral switching zone in the memory material layer between the first and second electrical contacts wherein the lateral switching zone can be traversed by a current signal that can be used to induce a reversible phase change in the phase change memory material layer between a crystalline phase and an

amorphous phase and thus a change in resistance of the phase change material in the lateral switching zone; and

in each phase change memory, one of the electrical contacts of each phase change memory is at the same electrical potential as a respective one of the electrical contacts of the other phase change memories; and

arranged one above the other, wherein respective phase change memories which are arranged directly above one another are contacted by way of a common via.

39. (new) The 3D phase change memory cell array according to claim 38 further comprising:

in order to address a selected phase change memory of a 2D phase change memory cell array, respective phase change memories which are arranged directly above one another can be switched to a first potential by way of the common via, and in the process all the other phase change memory cells of any other 2D phase change memory cell array can be switched to a second potential.

40. (new) An electronic component with an application specific module and an integrated memory function and/or logic function, comprising:

a phase change memory comprising:

a phase change memory material layer having a lateral extension; and

first and second electrical contacts configured to define a lateral switching zone in the memory material layer between the first and second electrical contacts wherein the lateral switching zone can be traversed by a current signal that can be used to induce a reversible phase change in the phase change memory material layer between a crystalline phase and an amorphous phase and thus a change in resistance of the phase

change material in the lateral switching zone.

41. (new) The electronic component according to claim 40 further comprising a phase change memory cell wherein the phase change memory cell comprises:

a plurality of phase change memories; and

in each phase change memory cell, one of the electrical contacts of each phase change memory is at the same electrical potential as a respective one of the electrical contacts of the other phase change memories.

42. (new) The electronic component according to claim 41 further comprising a plurality of two-dimensionally connected and individually addressable phase change memory cell arrays wherein each memory cell array comprises a plurality of phase change memory cells arranged one above the other, wherein respective phase change memories which are arranged directly above one another are contacted by way of a common via.